QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

AEE/QA/PR/98/2022-23, DATE: 6/10/23		
Name of Work	:	Improvements to roads and drains behind swathi hotel at Sahakara Nagar in Ward No:10 Kempapura Estimated cost 61.00 Lakhs
Job Code	:	010-23-000011
Bill No.& Amount	:	**1st&Final Bill.Rs. 61,71,000.00(Including GST)**
Name of Agency	:	**Sri. Pradeep S**
Type of Test Performed	:	Rebound Hammer test as per IS13311-(2)-1992&Bitumen Content and Gradation test as per Table 500.10 & Table 500.17 MoRTH V Revision.
Materials on which Tests Was Performed	:	1.RCC Drain wall (M20) 2.Precast cover slab(M15) 3.Dense Bituminous Macadam (Grade II) 4.Bituminous Concrete (Grade II)
Officers present during inspection	:	1.Sri. Santosh Kumar AE- Ward No 10 2. Sri .K.M.Yadukrishna AEE-Quality Assurance
Project Management Consultants	:	Civil Pro
Observations	:	➢ NDT (Rebound hammer test) and Bitumen content & Gradation test was conducted by Project Management Consultants representative at random locations in presence of AE(Ward No.10), along with AEE QA division. ➢ The Rebound Hammer Test was conducted randomly on RCC Drain wall (M20), Precast cover slab (M15), and also Bitumen content & Gradation Test were conducted for DBM (Grade II), BC (Grade-II). The readings and results are recorded by the PMC consultants. ➢ The readings of Rebound Hammer Test and Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	**Location 1**: Naati Sogadu road, E Block, Sahakarnagar.(Infront of Esteem Gardenia, Infront of #2650, M.A baig house, 6th Cross, behind Swathi gardenia) **Location 2**: : Naati Sogadu road, E Block, Sahakarnagar (Infront of Esteem Gardenia, Infront of BIK Prop)

K.M. 6/10/23
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Table-01: Bitumen Content and gradation Test Results for Naati Sogadu road, E Block, Sahakarnagar at random locations

DBM- (GRADE-II)

Landmark/Location	Infront of Esteem Gardenia	Infront of #2650, M.A baig house
Description	Trial 1	Trail 2
1.Initial weight of sample (gms) w1	331	328
2. final weight of sample after extraction (gms) w2	318	315
3. Initial weight of filter paper (gms) w3	4	4
4. Final weight of filter paper (gms) w4	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	15	15
7. Bitumen content in % (w6/w1)x100	4.53	4.57
8.Average	4.55	

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0	0	0.0	100.0	100
26.5	15	15	4.7	95.3	90 - 100
19	66	81	25.5	74.5	71 - 95
13.2	50	131	41.2	58.8	56 - 80
4.75	60	191	60.1	39.9	38 - 54
2.360	33	224	70.4	29.6	28 - 42
0.300	38	262	82.4	17.6	7 - 21
0.075	40	302	95.0	5.0	2 - 8

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0	0	0.0	100.0	100
26.5	10	10	3.2	96.8	90 - 100
19	50	60	19.0	81.0	71 - 95
13.2	55	115	36.5	63.5	56 - 80
4.75	60	175	55.6	44.4	38 - 54
2.360	45	220	69.8	30.2	28 - 42
0.300	47	267	84.8	15.2	7 - 21
0.075	30	297	94.3	5.7	2 - 8

K.M. Halli 6/10/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Table-02: Bitumen Content and gradation Test Results for Naati Sogadu road, E Block, Sahakarnagar at random locations

BC- (GRADE-II)

Landmark/Location	Infront of Esteem Gardenia	Infront of #2650, M.A baig house	6th Cross, behind Swathi gardenia
Description	Trial 1	Trail 2	Trail 3
1.Initial weight of sample (gms) w1	304	300	301
2. final weight of sample after extraction (gms) w2	289.5	285.5	286.5
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	16.5	16.5	16.5
7. Bitumen content in % (w6/w1)x100	5.43	5.50	5.48
8.Average	5.47		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	10	10	3.5	96.5	90-100
9.5	60	70	24.2	75.8	70-88
4.75	55	125	43.2	56.8	53-71
2.36	30	155	53.5	46.5	42-58
1.18	29	184	63.6	36.4	34-48
0.6	20	204	70.5	29.5	26-38
0.3	24	228	78.8	21.2	18-28
0.15	20	248	85.7	14.3	12-20
0.075	26.5	274.50	94.8	5.2	4-10

SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	11	11	3.9	96.1	90-100
9.5	57	68	23.8	76.2	70-88
4.75	56	124	43.4	56.6	53-71
2.36	37	161	56.4	43.6	42-58
1.18	24	185	64.8	35.2	34-48
0.6	21	206	72.2	27.8	26-38
0.3	20	226	79.2	20.8	18-28
0.15	21.5	247.5	86.7	13.3	12-20
0.075	22.0	269.5	94.4	5.6	4-10

SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	16	16	5.6	94.4	90-100
9.5	66	82	28.6	71.4	70-88
4.75	49	131	45.7	54.3	53-71
2.36	31	162	56.5	43.5	42-58
1.18	24	186	64.9	35.1	34-48
0.6	19	205	71.6	28.4	26-38
0.3	26.5	231.5	80.8	19.2	18-28
0.15	17	248.5	86.7	13.3	12-20
0.075	20.0	268.5	93.7	6.3	4-10

6/10/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Table-03: Rebound Hammer Test Results for

Sl. No.	Landmark	Member	Rebound Hammer Number	Average reading	Compressive Strength (N/mm2)	Impact Direction
Sample Tested Location at : Naati Sogadu road, E Block, Sahakarnagar						
1	Infront of Esteem Gardenia	RCC Drain wall (M20)	28	28	22	Horizontal
2			26			
3			30			
4			26			
5			28			
6			28			
1	Infront of BIK Prop	Precast cover slab (M15)	20	21	17	Vertical Down
2			22			
3			20			
4			22			
5			20			
6			22			

Conclusion:

The file containing **1st & Final bill** has been submitted for the above work to QA department on **28.06.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on **30.09.2023**

PMC team was instructed to assess the strength of concrete used RCC Drain Wall (M20), Precast cover Slab (M15) by Rebound Hammer Test and also Gradation & Bitumen content test for DBM (Grade II), BC (Grade-II) on Asphalted road . The Rebound hammer test and Bitumen Content and Gradation Tests were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the samplescollected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Engineer in charge of work shall ensure that work executed as per this bill is not claimed in any other bill /work or else Engineer in charge of work shall be held responsible.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by QA/QC is pertaining to the work carried out in **1st & final bill** only. Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

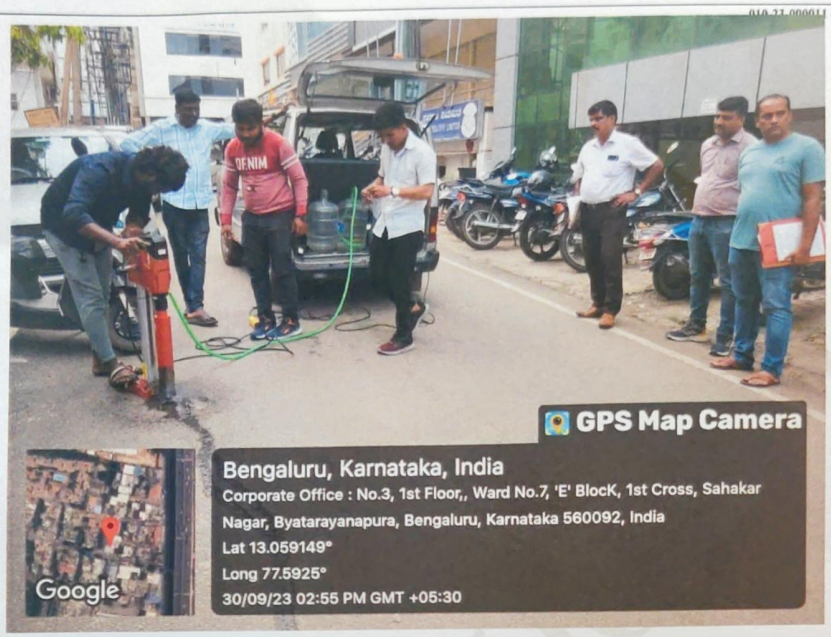
Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

Engineer in charge of work shall ensure that any changes/ modification/change in location in the sanctioned estimate to be got approved by competent authority.

4/10/23

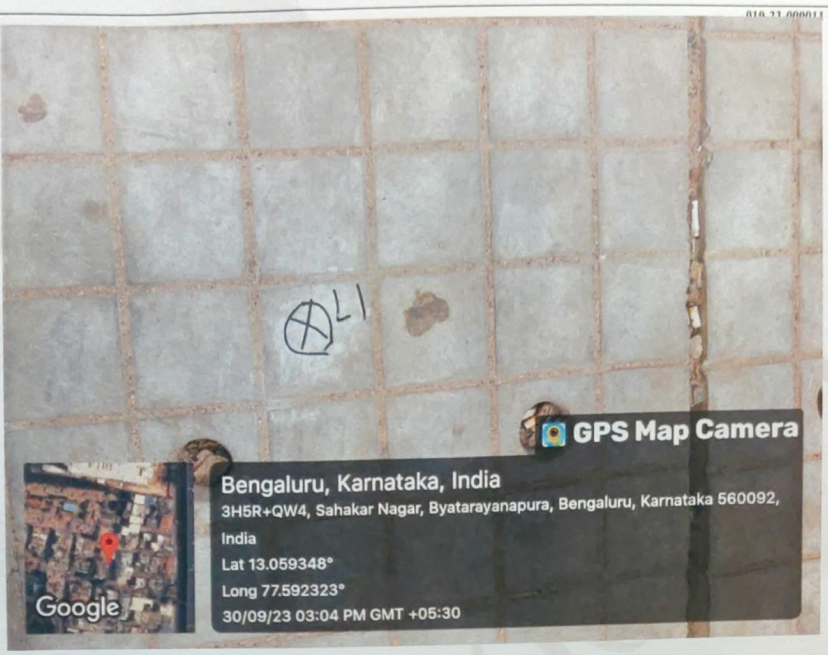
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಧರವನೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

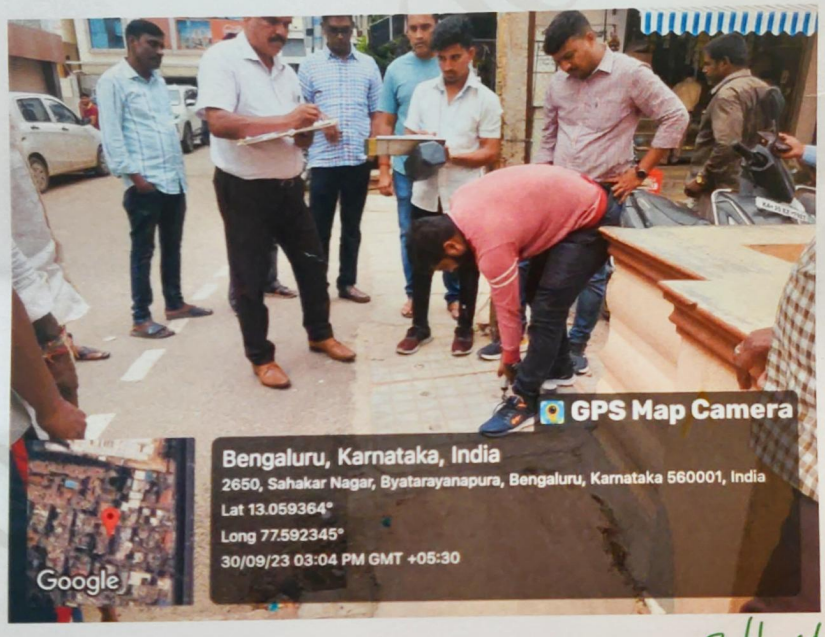
K. M. 6/10/23
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



K.M 6/10/23

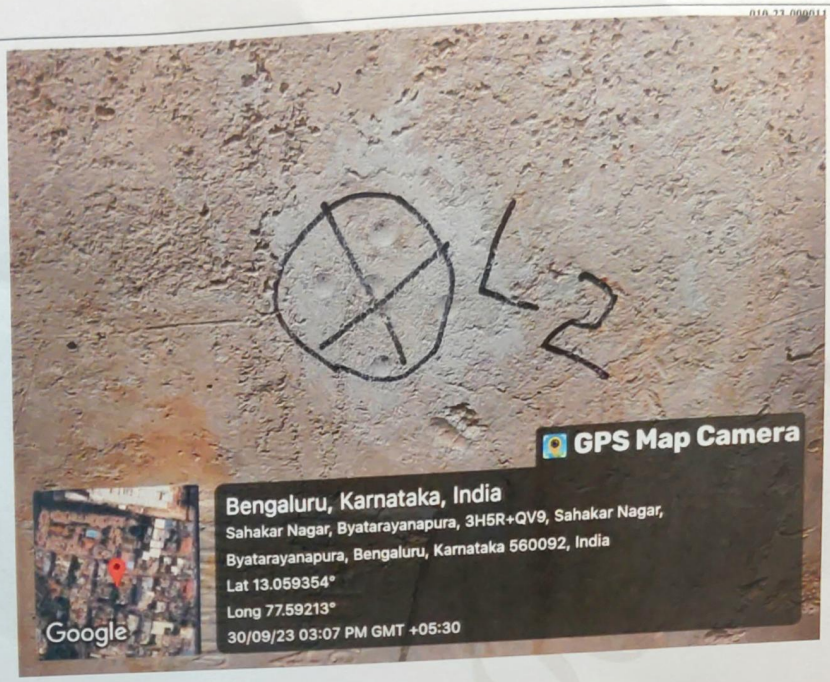
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ





K.M. 4/10/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



6/10/23

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ